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THE

Journal of the Society of Arts,

AND OF

THE INSTITUTIONS IN UNION.

116TH SESSION.]

FRIDAY, NOVEMBER 19, 1869. [No. 887. VOL. XVIII.

Announcements by the Council.

ORDINARY MEETINGS.

Wednesday Evenings at eight o'clock :—

NOVEMBER 24.—“On Silk Supply.” By THOMAS DICKINS, Esq., Chairman of the Silk Supply Association. On this evening Francis Bennoch, Esq., will preside.

DECEMBER 1.—“On an Improved Means for Laying a Tunnel for the Transit of Passengers across the Channel.” By ZERAH COLBURN, Esq., C.E. On this evening Captain Tyler, R.E., will preside.

DECEMBER 8.—“On Prints and their Production.” Being a sequel to a former paper, entitled “Engraving and other Reproductive Art Processes.” By S. T. DAVENPORT, Esq.

DECEMBER 15.—“On India-rubber, its History, Commerce, and Supply.” By J. COLLINS, Esq.

DECEMBER 22.—“On the Recent Improvements in Small Arms, British and Foreign.” By Capt. O’HEA.

CANTOR LECTURES.

The first course of Cantor Lectures for the present Session will be “On the Spectroscope and its Applications,” by J. NORMAN LOCKYER, Esq., F.R.S., and will consist of three Lectures, to be delivered on Monday Evenings, the 6th, 13th, and 20th December, at Eight o’clock.

These Lectures are open to Members, each of whom has the privilege of introducing two Friends to each Lecture. Tickets for this purpose have been forwarded to each Member.

INDIA COMMITTEE.

At a meeting of the Committee, held on Thursday, Nov. 11th, it was resolved that the Council be recommended to memorialise the Secretary of State for India to take measures that the visit to this country of Niaz Mahomed, a native of Yarkand, may be made useful for the promotion of our commercial interests in High Asia.

The Conferences on subjects relating to India will be resumed on Friday evening, the 26th instant, when a paper on “Irrigation,” by T. Login, Esq., C.E., will be read and discussed. The chair will be taken at 8 o’clock.

The Council, on the recommendation of the Committee, offers the silver medal of the Society for the best treatise on the profitable production of tea. Competing treatises must be sent in to

the Secretary of the Society of Arts, on or before June 1st, 1870. Each treatise must bear a distinguishing motto, and be accompanied by a sealed envelope, containing the name and address of the writer, with a corresponding motto on the outside.

The following suggestions have been drawn up by the Committee, for the guidance of intending competitors :—

1. The medal is offered in consequence of the conflicting opinions expressed on the subject by practical men in England, as shown by the reports of the two conferences on tea cultivation, held by the Society.

2. The treatise to be on—“The profitable Production of Tea in India, from the First Purchasing or Renting of the Land to the Arrival of the Tea in the London Market,” with especial reference to the following points :—

The cost, *i.e.*, the price or rent, of land, and its judicious selection as to soil and climate.

The best method of raising and planting out tea plants, and the effect of the use of manure.

The relative advantages of planting in the “shade” or the “open.”

The use of mechanical inventions and contrivances, as tending to reduce the cost of production and manufacture, more especially in leaf-rolling; the application of steam or hot air to the roasting or drying processes with a view to economy in fuel; and machinery to simplify and cheapen the manufacture of tea-boxes.

The manufacture of brick tea, such as will find a profitable sale in Central Asia, and successfully compete with that from China.

The utilisation of tea seed in the arts and manufactures, or in feeding cattle.

The rolling and sifting of tea.

The condition of the supply of labour.

The size of tea packages.

The cost of cultivation in full detail.

The cost of manufacture in full detail.

The nature and cost of transit in full detail; first to sea-port; second to London.

The chemistry of tea manufacture.

The causes of “sour” tea, and how they may be avoided.

The causes of past failures.

3. The attention of writers is especially called to the treatises of Ball, Fortune, Bruce, and Morice.

MECHANICAL COMMITTEE.

The Council have appointed a Committee to consider and discuss questions, relating to mechanical inventions, which may appear to be of too technical a character to be brought before the Society at the Wednesday evening meetings.

DESIGNS FOR CHANNEL STEAMERS.

In response to the offer of premiums, seventeen models and one drawing have been received. These have been referred to a Committee, on which the following gentlemen have been invited to serve :—

Lord Henry G. Lennox, M.P., Chairman of the Council.	C. W. Merrifield, F.R.S.
Lieut.-Colonel Boxer, R.A.	Admiral Ommaney, C.B.
Henry Cole, C.B.	E. J. Reed, C.B., Chief Con- structor of the Navy.
Sir J. F. W. Herschel, Bart.	Seymour Teulon.

TELEGRAPH COMMITTEE.

The Council, looking at the fact that the Government have now taken under their control the whole of the telegraphs of the United Kingdom, have appointed a standing Committee of the Society of Arts to watch the interests of telegraphy generally, as well as to promote the progress of the science and the efficiency of the system. The following gentlemen have been invited to serve on this Committee :—

Lord Sackville Cecil.	Professor W. A. Miller,
Earl of Caithness, F.R.S.	F.R.S.
Sir W. Fothergill Cooke.	C. W. Siemens, F.R.S.
Latimer Clark.	Professor Tyndall, F.R.S.
Hyde Clarke, D.C.L.	Sir William Thomson,
Colonel Glover.	F.R.S.
Professor Guthrie.	Cromwell F. Varley.
Sir J. F. W. Herschel, Bart.,	Sir Charles Wheatstone,
F.R.S.	F.R.S.

HUSKING AND CLEANING RICE.

The following communication from the India Office was laid before the Council, and the Secretary was instructed to take the opportunity of his recent visit to Manchester to proceed to Liverpool, with the view of obtaining the required information :—

India Office, S.W., 24th September, 1869.

SIR,—The Secretary of State for India has been requested by the Government of India to obtain information for them, on the processes pursued in England, France, and other parts of the Continent of Europe, and, if possible, in the United States, for husking and cleaning rice.

The Government of India have also suggested that such information might be obtained through the Society of Arts, and I am therefore directed by the Duke of Argyll to request that the wishes of the Government of India may be placed before the Council of the Society.

I am, Sir, your obedient servant,

HERMAN MERIVALE.

P. Le Neve Foster, Esq.

The Secretary visited Liverpool with this object, and obtained materials for a report, which will shortly be laid before the Council, and transmitted to the Secretary of State for India. It will also be published in the *Journal*.

PRESERVATION OF MEAT.

The following communication, received from the Colonial Office, has been laid before the

Council, and by them referred to the Food Committee :—

Downing-street, November 1st, 1869.

SIR,—I am directed by Earl Granville to transmit to you, to be laid before the Committee on Food, sitting at the office of the Society of Arts, a copy of a despatch from the Governor of Victoria, on the subject of two meat-preserving companies established in that colony. Some of the samples of meat sent by the Melbourne Company, which is referred to in the memorandum of the Chief Secretary of 17th June, also accompany this letter.

I am, Sir, your most obedient servant,

F. R. SANDFORD.

The Secretary to the Society of Arts.

Governor Sir J. M. Sutton to Earl Granville.

(COPY.)

Government Offices, Melbourne, June 18th, 1869.

MY LORD,—I have the honour to bring under your lordship's notice the enclosed copies of letters, which have been addressed to the Chief Secretary by two meat-preserving companies established here, together with a copy of the memorandum of the Chief Secretary on the subject referred to in those letters. It is, I am sure, unnecessary for me to disclaim any preference for these companies, or for either of them, as compared with others, whether companies or individuals, engaged in similar enterprises; but it would, I believe, be difficult to overestimate the important benefits which these colonies (I do not refer to Victoria alone) would derive from the development of a trade in preserved meats, the produce of the colonies. And as it is not desired to obtain these benefits at the expense of either the imperial or the colonial governments, or at that of the consumers (for if they should not likewise derive benefit from the trade, it would, as it ought to, fail), your lordship will, I hope, pardon me for requesting such assistance as you may properly afford, for enabling the military and naval departments, and the public at large, to examine and to form their own opinion on the character and prospects, as regards purchasers, of a trade in the establishment of which these colonies have so deep an interest.

I have, &c.,

(Signed) J. H. T. MANNERS SUTTON.

The Right Hon. Earl Granville, K.G.

(COPY.)

With reference to my late interview with his Excellency the Governor, when his Excellency was pleased to say he would bring under the notice of the Right Honourable the Secretary of State the preserved meats of the Victoria and the Melbourne Meat Preserving Companies, I beg to hand to his Excellency copies of letters addressed to me by the two companies, also, for transmission to Earl Granville, a bill of lading for one case of meat shipped by the Melbourne Company per *Avoca*.

It is unnecessary for me to observe that, while this government does not desire to favour one company more than the other, the assistance which is sought from her Majesty's government is of great importance to the producing interests of the colony.

(Signed) JAMES McCULLOCH.

17th June, 1869.

Mr. Randall to the Honourable J. McCulloch.

(COPY.)

The Melbourne Meat Preserving Company, Limited,
55, Queen-street, Melbourne, 5th May, 1869.

SIR,—At the suggestion of one of the shareholders of this company, I am instructed by the board to forward you a case containing 12 tins of our preserved meats, and to request the favour of your kind intervention in bringing them under the notice of her Majesty's govern-

ment at home, through his Excellency the Governor of the colony.

It is needless for me to mention the many channels that are open for the introduction of our meats at home. Besides the navy, and for military purposes, they might advantageously be used in prisons, poor-houses, &c.

I have advised our London agents, Messrs. John McCall and Co., of 137, Houndsditch, that this case has been forwarded to you, and they will be prepared to supply the home government with any additional samples they may require, and will also quote prices, and give all requisite information.

I append a note of the contents of the above-mentioned case.

I have, &c.,

(Signed) R. R. RANDALL, Secretary.

To the Honourable James McCulloch,
Chief Secretary of Victoria.

CONTENTS OF CASE.

6 tins	boiled mutton	6 lbs. each
4 „	boiled beef	6 lbs. each
1 „	corned beef	6 lbs.
1 „	spiced beef	6 lbs.

Mr. Caldwell to the Honourable J. McCulloch.

(COPY.)

Melbourne, 16th June, 1869.

SIR,—I have the honour to refer, with many thanks, to your government, to the exertions which the agent general has made to introduce Australian preserved meat, for the use of H.M. Navy, and I would take the liberty to remind you of the sample cask forwarded, per your favour, to the Hon. George Verdon, on the 5th of March, per *Somersetshire*, the bill of lading of which was forwarded to you, for the purpose of submitting the meat to the examination of the proper naval authorities at home. So all important is this question to the success of our company, and, I may say, to the prosperity of these colonies, that I hope you will excuse me if I request your kind intervention with the governor to procure a special application, not only for our company, but for any other company as well, having such products to introduce, more especially to draw attention to the sample cask above referred to, and to get a trial order for both beef and mutton to be put on board the ships, and submitted to the test of their approval.

I have, &c.,

(Signed) ROBERT CALDWELL,

Victoria Meat Preserving Company.

To the Hon. James McCulloch.

SUBSCRIPTIONS.

The Michaelmas subscriptions are due, and should be forwarded by cheque or Post-office order, crossed "Coutts and Co.," and made payable to Mr. Samuel Thomas Davenport, Financial Officer.

Proceedings of the Society.

FIRST ORDINARY MEETING.

Wednesday, 17th November, 1869; Lord HENRY GORDON LENNOX, M.P., Chairman of the Council, in the chair.

The following candidates were proposed for election as members of the Society:—

Ainsley, S. James, 13, St. Mark's-crescent, Regent's-park, N.W.

Anderson, William Mortimer, 1, Buckingham-gate, S.W.

Ashford, John Richard, 9, Cambridge-terrace, Clayton-road, Peckham, S.E.

Balfour, Major-General George, C.B., 6, Cleveland-gardens, W.

Banyard, William Barnard, 1 and 2, Great Winchester-street-buildings, E.C.

Barrett, John Woodward, 9, Ramford-place, Plough-road, Rotherhithe, S.E.

Bartholomew, Charles Eugene, 1, Chepstow-villas, York-road, Dartmouth-park, N.

Baxter, R. Dudley, 6, Victoria-street, Westminster Abbey, S.W.

Benas, Alfred, 62, Cornhill, E.C., and 148, Queen's-road, Bayswater, W.

Bishop, William H., jun., 7, Sumner-terrace, S.W.

Brightman, Richard, Sheerness.

Browne, William Lewis Clifton, Clifton-villa, Belsize-road, N.W.

Bulmer, Edward Sewell, Conservative Club, S.W.

Burnett, Rev. C. Compton, The Manse, Newmarket.

Buttery, Horace, 173, Piccadilly, W.

Carlill, John Burford, M.D., 42, Weymouth-street, Portland-place, W.

Chance, R. L., Glass Works, near Birmingham.

Cheverton, George, Tunbridge Wells.

Clark, William Chignell, M.A., Ph.D., Ongar, Essex.

Cowper, John Curtis, 27, Victoria-road, Kensington, W.

Crowley, Frederick, Alton.

Dalziel, Davison Octavian, 47, Wood-street, Cheap-side, E.C.

Dashwood, Thomas, Ryde.

De Stern, Baron, 4, Hyde-park-gate, Kensington, W.

Digby, George Digby Wingfield, Sherborne Castle, Dorsetshire.

Drummond, Rev. William Richard, All Saints Church, New Amsterdam, Barbice.

Eames, T. R., Bridge-house, Barnes, S.W., and St. Michael's-house, Cornhill, E.C.

Eaton, Richard, Basford, Nottingham.

Ellis, Arthur William, Messrs. Simpsons, Payne and Co., Millwall, E.

Evans, Henry J., Cardiff.

Eyre, Charles, Welford-park, Newbury.

Fennell, John Greville, Barnes, S.W.

Fielden, Joseph, Witton-park, Blackburn.

Franklin, J. A., 58, Gower-street, W.C.

Franks, C. W., 2, Victoria-street, S.W.

Garford, John, 31, Russell-square, W.C.

Gaskell, Daniel, Lupset-hall, Wakefield.

Goodford, Rev. Charles O., D.D., Provost of Eton.

Gordon, Hugh M., Abergeldie.

Hickisson, James, 75, Southgate-road, N.

Higley, William S., London and Westminster Bank, 41, Lothbury, E.C.

Irvine, John R., Firhill, Springbank, Glasgow.

Isborn, George R., Oriol-chambers, Water-street, Liverpool.

Jahn, Adolf, 32, Alwyne-road, Canonbury, N.

Johnson, William, Bank-house, St. Helen's, Lancashire.

Kehde, H. A., 96, Denmark-road, Kilburn, N.W.

Lowe, William Drury, Locke-park, Derby.

Lyon, John George, Messrs. Burt, Boulton, and Heywood, Millwall, E.

Lyon, Joseph, Chapel-house, Ormskirk.

Mackinnon, William Alexander, Acrise-park, Canterbury.

Maitland, William, Adlestone, and 2, Royal Exchange-buildings, E.C.

Mayer, Joseph, Liverpool.

McCorquodale, George, the Willows, Newton-le-Willows.

Mechi, J. J., Regent-street, W.

Napper, H. F., Lakers-lodge, Loxwood, Horsham.

Oakden, Ralph, Exeter-house, Bournemouth.

Palmer, John Dalton, Brunswick-house, Barnsbury-park, N.

Pattinson, W. W., Felling-house, Gateshead.

Phillips, Josias, Literary Institution, Bodmin.

Powell, Thomas Harcourt, Drinkstone-park, Bury St. Edmunds.
 Raphael, Alfred, 19, Princes-square, Bayswater, W.
 Reeves, Thomas James, Woodhays, Wimbledon, S.W.
 Roberts, Thomas, Hamilton-house, Milford.
 Rosser, William, Llanelly.
 Rothery, Charles William, Littlethorpe-villa, near Ripon.
 Ryde, John, 155, Fenchurch-street, E.C.,
 Samuda, Joseph, 3, Dartmouth-park-road, Highgate-road, N.W.
 Sanders, Gilbert, 53, Claverton-street, Pimlico, S.W.
 Steel, John, Southerfield, Abby-town, Carlisle.
 Stephens, C., Woodley-hill, Earley, Reading.
 Storer, Richard Milward, 16, Cranbourn-street, W.C.
 Sturman, Edward Albert, LL.D., Packington-college, Packington-street, N.
 Thudichum, T. L. W., M.D., 3, Pembroke-road, Kensington, W.
 Turnbull, Maxwell Gartshore, 30, Upper Berkeley-street, Portman-square, W.
 Varley, Samuel Alfred, 66, Roman-road, Holloway, N.
 Waite, Charles, LL.D., St. John's College, Weighton-road, South Penge-park, S.E.
 Ware, Charles W. Cumberlege, 21, Princes-gate, W.
 Wilkinson, Frederick Eachus, M.D., Battle-cottage, Sydenham, S.E.
 Williamson, G. J., 124, Lower Thames-street, E.C.
 Yarrow, A. F., 42, Grosvenor-road, Highbury New-park, N.
 Zanni, Geminiano, 29, Sidmouth-street, Gray's-inn-road, W.C.

The CHAIRMAN delivered the following

ADDRESS.

LADIES AND GENTLEMEN,—Before entering on the business of the evening, it is only right that I should express to you the great diffidence with which I appear before you as Chairman of the Council of the Society of Arts. Certainly, on the last occasion when I had the honour of addressing you from this place, I had no idea that I should, at so short an interval, be again trespassing on your kind attention and forbearance. I am so sensible of my own shortcomings on that occasion, that it was only upon its being clearly explained to me that my re-acceptance of the office would at this time be advantageous to the interests of the Society, that I consented to undertake such an onerous position. I may add that the diffidence which I felt was somewhat removed by the knowledge that the bye-laws of the Society have clearly laid down what are the duties of the chairman, upon the opening night of the session, the rule being to the effect that “the chairman of the Council shall deliver an address to the Society at its first ordinary meeting after his election, declaratory of the policy which the Council proposes to follow during its year of office.” It will, therefore, my duty this evening to try and shadow forth be such a programme as shall induce the members to feel an increased interest in the Society, and to give their hearty co-operation to the Council in its endeavours to promote the objects for which the Society was founded.

Since our last meeting, the Society has lost by

death three very distinguished members. Dr. Roget and Professor Graham (Master of the Mint) died sincerely and deservedly regretted by the scientific world, and leaving behind them a great reputation for the success of their labours in the cause of science. The news of the sudden death, at St. Petersburg, of Sir Wentworth Dilke, was, I am certain, received by every one of our members with unfeigned regret. Since 1845, Sir Wentworth had shown the most indefatigable zeal and energy in promoting the various objects of the Society of Arts; he was emphatically a Society's man. He was a member of the Society's Committee for promoting the Great Exhibition of 1851, and was named in the Royal Commission as one of the five members of the Executive Committee. At the close of that brilliant success, honours were showered upon him, and pecuniary reward was offered and declined. In 1853, he was appointed by the Crown as Commissioner at the American Industrial Exhibition in New York. His special report on that exhibition was, the following year, printed and laid on the table of the House of Commons. From 1857 to 1859, he held the office of Chairman of the Council of this Society. For the International Exhibition of 1862 he was again Executive Commissioner, and, on the death of the Prince Consort, he received a baronetcy, in recognition not only of his public services, but also of the regard and esteem in which he was held by the Prince, who looked upon him as his most valued adviser in the various undertakings which his Royal Highness promoted for the public good. I feel that, in this room and in this Society, no more flattering epitaph can be pronounced upon him than this, that Sir Wentworth Dilke earned the esteem and confidence of that great Prince who is so deeply regretted by us all.

It is well known that, in all large societies, a great deal of the most valuable work is done by committees, and, amongst ourselves, so successful have been the operations of several of these Committees, that they have been requested by the Council to continue their labours during the ensuing session. Foremost amongst these, not only from the mass of information collected, but also from the practical value of their labours, stands the Committee on Food.

The Food Committee, originally appointed three years ago, upon the suggestion of my lamented friend, our Vice-President and active member of Council, Mr. Harry Chester, has, as the pages of the *Journal* have informed the members, been busily engaged in collecting and publishing information connected with the supply of food to the people. Valuable information has been given on a variety of topics relating to that subject. The supply of meat, fish, poultry, milk, and grain, together with the distribution of them,

whether by markets or otherwise, have all occupied in turn the attention of the Committee. The information thus collected has been widely circulated, and has drawn attention to the solution of several problems. At the present time, the great question for which solution is urgently wanted is some means by which meat can be brought to this country, where it is dear, from our colonies and other countries, where it is abundant and cheap, in a raw state, unsalted and uncured. Surely our chemists ought to be able to devise some means by which decay and decomposition can be arrested a sufficient length of time to allow the meat to be brought from abroad and sold in our markets. The Committee has had before them many processes for this purpose, and has put them to the test; hitherto, however, the results have not been such as to warrant the Committee in pronouncing any one as completely successful, although, in some instances, a sufficient amount of promise has appeared to justify the parties in further prosecuting their labours.

I may mention, as an instance of how much the labours of the Society in this department are appreciated in high quarters, that, only a day or two ago, Lord Granville, the Secretary of State for the Colonies, forwarded here certain packages of preserved meats which had been received from the colonies, and the fitness of which for the supply of our army and navy the Government were desirous of having tested. This shows the esteem in which our labours are held, his lordship evidently considering the Food Committee of this Society the most competent authority to give an opinion upon such an important question.

Up to this point, I believe it is true that the plan which appears to hold out most prospect of success is that which, at the same time, presents the least novelty of conception, viz., the preservation of meat by means of ice. It is evident, however, that unless ice can be produced much cheaper than at present, no appreciable results can be expected from this system, and I am, therefore, obliged to repeat what I said last year, that, as yet, an increased supply of meat to the people of this country appears to depend upon the success which may attend the labours of our scientific chemists in producing artificial ice at an economical rate. Suggestions have indeed been made at different times as to the feasibility of importing live cattle from the countries above referred to, and some few have been already so brought from Rio de Janeiro; but the remembrance of the fearful havoc made by that plague which was first introduced into this country by foreign cattle, is still too recent for public opinion to look with much favour upon projects of this kind. Those who reflect how many thousands of the poor in this metropolis and throughout

the country go many weeks, and even months, almost without animal food, cannot but follow with anxiety the efforts which are still being made for the attainment of this great end; and I earnestly trust that the information collected and published by the Food Committee, during the ensuing session, will so stimulate the scientific world, as to enable my successor next year to announce to the Society a satisfactory solution of the great problem to which I have alluded.

For many years the Society of Arts has had under its consideration the best means for bringing about an improvement in the condition of British India, by developing the vast agricultural resources of that Empire.

With this view, a Committee was appointed last session to inquire into the whole subject of the hidden wealth of India. It proceeded principally by means of Conferences, at each of which a paper was read and a discussion followed.

This Committee proved a great success, and the information collected by it has been published, and will probably lead to very important results. Papers were read on the following subjects:—On the Cultivation of Tea, of Silk, and of Cotton, on Indian Fibres, on Waste Lands in India, on Hill Settlements and Sanitaria, and generally upon the state of trade with Central Asia and Thibet.

The discussion on tea culture elicited some very interesting facts, vouched for by unimpeachable testimony; among the most important, that the quality of the tea grown in India is fully equal to that grown in China, and that the quantity was only limited by comparative ignorance of the proper means of its cultivation, and, further, by the limited amount of labour that can be procured in order to produce it at a remunerative price.

The area of land taken up by tea cultivation is not easily estimated, as the tea companies, although possessed of large estates, have only a portion under cultivation, and there is no means of ascertaining the extent of the private tea gardens. About 550,000 acres have been taken up, of which about 60,000 have been brought under cultivation, and there is a large amount of land at the disposal of the government, suitable for tea cultivation, still unappropriated.

Bearing these facts in mind, it is sad to read the figures as to the yearly growth and exportation of tea from the two empires, India and China. Last year, the exportation of tea to this country was 154 millions of pounds, of which 106 million lbs. were retained for consumption in this country, which gives our consumption at about 3½ lbs. per person. England, Russia, and America are the chief tea-consuming countries; the two latter, it may be assumed, consumed one million pounds. Then there are the Chinese people, three millions in number, and great tea consumers. Taking

our own consumption as the standard for Russia, America, and China, it would appear that, in China alone, there is an annual production of 80 or 100 millions of pounds, and only seven millions of pounds in India, and this after nearly a quarter of a century of cultivation.

The Society has co-operated this year with the Manchester Cotton Supply Association, in awaking the attention of the government of India to the improvement of the culture of cotton and other agricultural products of that country.

The attention of the Committee was also directed to the production of silk. The extensive spread of disease among the silkworms of various producing countries, has, for many years, been attended by a failure of this important material of manufacture. The effect has been to inflict great distress on several towns in England which were engaged in the various branches of this industry. It has, therefore, been a matter of great satisfaction to the Council, to have co-operated in the movement for the establishment of a Silk Supply Association, such as has recently been formed. This association, which has now been organised, receives the support of most of the leading manufacturers, and it is proposed to start a journal especially to ventilate the subject. Mr. Dickens, president of this association, has kindly undertaken to read a paper on silk supply to our members next Wednesday evening, and no doubt an interesting discussion will ensue upon it.

The importance of extending the influence of Englishmen in India, as a means of promoting civilization and the advancement of the population, long since engaged the attention of the Society, and it was partly through the part taken in the matter by our members, that the Government of India seriously took up the promotion of Hill settlements and sanatoria in India. These establishments, which had been formed by the zeal of individual statesmen and administrators, have of late years been made productive of great benefit, not only to our European army, but in developing the resources of the temperate regions of India. Although there is a division of opinion among the Indian press, it is evident there is a more active interest excited in the departments of the Government and among the local public. The hill-stations have been visited this year by the several Governors, and there is every appearance of a more vigorous public feeling. By placing the English residents in more healthful climates, it is hoped they will be better able to exert their physical and mental powers. Observations made here, with regard to the sanitary arrangements of the hill stations, have also not been without a salutary effect in strengthening the hands of those locally interested.

The conservation of forests in India will, in

the present session, engage the attention of the Society. The indiscriminate destruction of timber not only diminishes rainfall and promotes drought, but, by depriving the inhabitants of wood fuel, it leads to the burning of animal manure for that purpose; thus the crops are deprived of a fertilising material, and evils flow from the abuse of natural resources. It is to this waste of manure that some attribute the inferior crops of cotton in many parts of India, where the yield is only 70 lbs per acre, as compared with 400 lbs. in the United States.

Sir Digby Wyatt has proposed to the Indian Committee that one of the conferences should be devoted to following up Mr. James Fergusson's admirable paper on the Monuments of India. The South Kensington Museum has done and is doing much to illustrate this interesting subject, and the Committee expect to bring together on that occasion such a collection of drawings and photographs as will afford the members and visitors a practical opportunity of appreciating the value and interest of the several styles of Indian Art.

During the Indian Conferences, the state of trade with Central Asia was the subject of discussion within this room, and in the public press. Much interesting information was given, but as the matter is very comprehensive, and by no means exhausted, it will be again taken into consideration this session. The Council has thought it desirable that the visit of Niaz Mahomed, a native of Yarkand, should be taken advantage of to obtain better information as to the nature of our increasing trade with High Asia, and the Council has recently memorialised the Secretary of State for India to take measures for that purpose.

One result of these conferences was, that a deputation waited on the Duke of Argyll, and pressed on his Grace the importance of developing the agricultural resources of India, by the appointment of a Minister of Agriculture, and by extending the system of assisted exhibitions of agricultural produce in India. The Duke of Argyll received the deputation with great cordiality; and although he could not, of course, promise the former, he agreed to write to Lord Mayo in favour of the latter course.

The Society of Arts has offered a silver medal for the best treatise on the profitable production of Tea. It may be interesting (as a proof of the excellent relations between our Society and the India-office) to know that the Duke of Argyll has recently asked us specially to report on the cultivation of rice in India. Nothing more need be said to justify the re-appointment of this Committee.

The next object upon which the Council intend, this year, to appoint a Committee is one on which I believe will be elicited information

of a very useful and interesting character. It will be composed of professional men and amateurs interested in the various mechanical questions of the day. In this Committee will be discussed such subjects relating to progress in mechanical inventions as are not of sufficient general interest to be brought before our ordinary meetings. This action of the Council may appear to some to be of a more sectional character than any which they have hitherto undertaken, but the Society will readily perceive that there are many details of mechanical science which are well worthy the careful attention of professional members, whilst at the same time they are hardly suitable for general discussion; and it has been long a well-known principle of economy that division of labour often produces the greatest and most valuable results.

Intimately connected with mechanical inventions is the subject of the Patent Laws. The Society having had a great hand in the enacting of the present laws, this most difficult question will continue to receive the anxious attention of the Council, and convenient opportunities for discussion will be afforded to all those who are interested in it, whatever may be their opinions,—whether they be the advocates of the maintenance of the present system, or whether they incline to a reform of that system, as well as those who take a bolder line, and propose an entire abolition of the monopolies conferred by the patent laws, or, as they are sometimes called, the taxes on invention. Far be it from me, as the mouthpiece of the Council, to give any decided opinion upon so vexed a question; a greater authority than I am will shortly speak on this subject. Sir Joseph Whitworth has promised to read a paper on it before the Society. I understand that it is about to be discussed in the French Legislative Chamber, and it will no doubt be brought under the notice of our own Parliament. I can, however, hardly be blamed for saying this much, that our present patent laws very often act unfairly, and that, in many instances, they operate as a serious impediment to trade. *Prima facie*, it cannot be denied that a man who has spent his lifetime or his fortune in experiments has a right to recoup himself when he has made a valuable discovery; but, on the other hand, it sometimes happens that the original inventor breaks down, or becomes bankrupt, before his invention can be perfected, and he is then obliged to sell his discovery to another, who, having none of the merits of an inventor, takes out the patent to the making of his own fortune, and the serious cost of the public. Again, it has been alleged, and indeed few can deny, that a great abuse has crept in, in the almost indiscriminate granting of patents for so-called inventions, the originality of which often

could not be supported for five minutes before a jury or a judge in equity, although they have received the sanction of the law officers of the Crown. This not only does harm in encouraging foolish persons to waste their money in taking out useless patents, but also encumbers the records of the office with an immense mass of rubbish, through which every intending patentee must search, in order to see whether he has been anticipated, or must run the risk of expensive litigation. This, indeed, is the almost universal accompaniment of a successful patent, so much so that the patent law, as now administered, would appear to be instituted for those who have merely patience and money, and not for those who have inventive power. Some persons are even bold enough to assert that the class of persons who derive most benefit from our patent laws are those gentlemen of the long robe who devote their special attention to this department of practice. As an instance of the great difficulty which often exists in deciding questions of this kind, I may mention that, on a recent occasion, the Master of the Rolls, being unable to decide between two opposing litigants, ordered the erection in the yard adjoining his Court of two elaborate models of the machines which formed the subject of dispute.

It is scarcely necessary to mention that the Society still directs its attention to the encouragement of art-workmanship, by offering premiums for the production of various articles.

For the present Session, the Society offers a large number of prizes for productions in most branches of art-workmanship, and additional prizes are offered for specimens of the application to industry of prescribed art-processes. The works sent in by competitors are exhibited in the Society's Rooms, for the inspection of members and their friends, and are usually afterwards, through the courtesy of the Lord President of the Council on Education, sent to the South Kensington Museum, where they excite considerable interest.

I need hardly remind you that, in 1852, the Society founded its Union of Institutions, and it now has about three hundred Literary and Scientific Societies and Mechanics' Institutions, in different parts of the kingdom, in union with it. A few years afterwards the Society's system of Examinations was established, the marked success of which is known to most of those present. When this system was first instituted, no other Examination existed which persons of the classes to which members of Institutions usually belong could take advantage of. But the example thus set by the Society was soon followed by the two Universities, in their Middle Class Examinations, and by the Government in the Examinations

held by the Science and Art Department. The former are, in many respects, unsuited for, and, indeed, cannot be taken advantage of by members of Mechanics' Institutions generally; but the latter are open to the class for which the Society's Examinations were established, and the subjects include a large number of those in the Society's list. These Government Examinations are certainly working well, and are attended by very large numbers of candidates, and the Council felt that, under these circumstances, it would be wise to omit from its list of subjects all those which are embraced by the Science and Art Department. The Council decided that, for the Society to continue doing on a small scale that which the Government is now doing on a much larger scale, and with equal efficiency, would be a waste of its power and funds, and they, therefore, removed sixteen subjects from the programme. It is hoped that, in adopting this course, the best interests of the Institutions have been consulted, while the Local Boards, which in nearly every case are connected with the management of the Science and Art Examinations, as well as those of the Society of Arts, will be relieved from their double labour, and the candidates themselves will not in any way suffer by the arrangement. I may add that the number of certificates awarded this year was 2,075, all of which received my signature.

I shall have the pleasure this evening of presenting to the most distinguished candidate of the year, Mr. William John Wilson, of the classes held at the Polytechnic Institution, an engineer's clerk, a prize that, as most of you are aware, was first given by the Prince Consort, whose valuable services to the Society will never be forgotten. This prize, which consists of twenty-five guineas, has, since his lamented death, been continued by Her Majesty, a constant proof of the warm interest taken by our Sovereign in the welfare of this Society.

Upon the subject of National Education, the Society of Arts has always taken up a position both impartial and neutral. Indeed, the position and composition of our Council renders such a course imperative. In all probability there are amongst our members gentlemen holding each a distinctive faith as to the principle on which a system of national education should be carried out. There are probably many who believe that education should be compulsory; there are others who think that it should be denominational as well; some may agree with me in viewing with satisfaction the arrangements in Faversham School Union, in which religious differences are set aside, and education placed on the basis of a common Christianity; and there are again many who believe the teaching of any distinctive form of religious belief should not be insisted on by the State, but should be left

out of school training, and should rest entirely in the hands of the parents, and of the ministers of religion selected by them.

The Council has, therefore, adopted one rule of conduct, and has continued the even tenour of its way, endeavouring to assist every institution which appears to further the great object which the Society has at heart, namely, that every child in the kingdom should have an opportunity of being properly educated in the primary and secondary, as well as technical, subjects of instruction. It was with this view that the Society subscribed recently twenty guineas to the Education League which met at Birmingham, and the like sum to the Education Union which met at Manchester. By those who left out of sight the principles which have always guided us, such a proceeding might be misunderstood, and, indeed, it was so by one of my friends who has held high offices in the State, and who has given great attention to, and earned much praise for, his views on national education. He argued that, by subscribing to the Education League, we stamped with our approval the principles or system approved by them, viz., a system of compulsory education supported by universal rates; but I am happy to say that he has readily admitted the soundness of the explanation given him by our Secretary, that it was not the means proposed, but the object sought, viz., an extension of sound and practical education, to which the Society gave its assistance.

I suppose I may take it for granted that there is at least one position upon which all are agreed, and that is, that the pressing necessity of the times is to establish an improved and extended system of technical education.

I may also take for granted that, excepting in a few large schools, an education of this character is not given at all; and even that teaching which is given is far from what it should and might be made. Of the small schools for elementary instruction which are scattered throughout the country, we are told by the Rev. Mr. Fraser, the school inspector, that one-third may be considered as good, one-third moderate, and the remaining one-third as positively bad. But, even in the best of these, technical instruction is, from want of time, impossible. What a melancholy picture we have here given us! There are at least one million of children born every year in this country for whose welfare, in after life, a sound technical instruction is positively necessary. Yet, we know from the reports published by the Science and Art Department, that there are at present only about one-tenth of this number by whom even elementary drawing is acquired. The object of the wage-earning classes in sending their children to school is to have them returned to them, prepared not for elegant scholars, but for superior

artizans. These classes are so situated that even the most thrifty amongst them cannot, in justice to themselves, spare the services of their children beyond the age of eleven, and even if they are left until they attain that age, what do they, under the present system of primary education, learn? I am assured on the best authority that, in the common parochial schools, it takes nearly seven years to impart, even fairly, reading, writing, and arithmetic, and this by the daily attendance of five or six hours' school, up to the thirteenth or fourteenth year. This, at thirteen or fourteen years, is little to have learned; and it is clear that those who are taken away at eleven years old can know this little but imperfectly. What is wanted now, therefore, is an improved system of education which shall, by shortening the time now given for primary, enable secondary and technical instruction to be given at the same time.

The great distress which has been, and is being felt by those engaged in some of our manufactures, is alleged by many to be solely due to the provisions of the French Treaty. It is not for me to enlarge upon so vexed a question as this; but I cannot forbear asking those of our manufacturers who are unable to compete successfully with the French manufacturers, and especially in those branches of production where beauty of design and harmony of colour are main ingredients of success, whether the deficiency may not, in some measure, be due to the lamentable want of technical instruction to be found among the industrial classes in this country, as compared with that possessed by the same classes in France—a contrast insisted upon by every one of those intelligent reports drawn up by artisans who were sent over by the Society of Arts to visit the Exhibition of Paris, in 1867.

It is certain that the present system of primary education is deficient, and, equally so, that it is possible so to improve the method of imparting it as to shorten the period for the perfection of elementary instruction, and at the same time combine technical instruction with it. The large schools now in existence show practically how much can be done in this direction, and they show further that this can be given at a cheaper rate than the deficient education which is now given in smaller schools. The same time which is now required for teaching a child but little, and that little imperfectly, may be made sufficient to teach him more, and that perfectly. The experience of large schools now demonstrates that this is perfectly feasible, where the teaching power is, owing to the number of children, so great as to admit of the classification of the pupils, not according to age, but to their capabilities and intelligence.

There are several great Institutions in which this attempt has already been made with most unexampled success, and two of these labour under the great disadvantage of being compelled to teach two languages; the Dowlais School, for the mining population in Wales, where Welsh is taught as well as English, and the great Jewish Free School, where Hebrew and English are taught together. Although the particulars of this great Institution have been published, yet, as I have recently visited it myself, perhaps I may say a few words as to the impression it produced on my mind. One of the most remarkable features in all these schools is the immense teaching power which is to be met with. The Jewish Free School is situated in Bell-lane, in the very midst of the poorest and most ignorant class of our densely-populated metropolis. The daily attendance in the boys' school is over 1,500, with the exception of Fridays, Saturdays, and Sundays. On Saturday, being the Jewish Sabbath, the school is closed entirely, and on Friday and Sunday the attendance falls off very greatly—on the former, as being the preparation for the Sabbath, and on the Sunday, as being our own holiday; so that I am informed that, were the school closed on those days, the omission would scarcely have any appreciable effect on the progress of the pupils. For this daily attendance of 1,500 boys there is a staff of thirty teachers, including the manager, and these have, almost without exception, received their education in the same establishment over which they are now called upon to preside. Many of them have taken their B.A. degree, whilst at least one is now studying for an M.A. degree at the London University, and these gentlemen, both in their acquirements and intelligence, would contrast favourably with those occupying the same position in any similar institution throughout the country. One of the most striking features of the school is the lowest class, composed of what may be called gutter children. It is impossible to run one's eye over the benches filled with these little outcasts without being struck with the completely vacant expression which is generally to be seen amongst them. A considerable proportion (seven to twelve) are of foreign parentage, Holland and Poland contributing their quota to the number. The majority, 90 per cent., on admission, are not able to give their own names, and appear to have no language in which to express their wants. Yet even in this, the very first stage, two languages, English and Hebrew, are taught. Compare this description of the lowest class with the least advanced in parochial schools, where most of those who enter have already been in attendance at an infant school. The school is divided into many classes, according to the knowledge of the boys, progressing onward to

the highest class. This generally numbers about 70, and although I myself saw some children of eleven years old, who had so far profited by the training they had received in the lower classes as to have earned their place in the highest at the age of eight, still the average should be set down at thirteen. It is most remarkable, in visiting this class, to observe the alteration in the *physique* of these lads since they left the lowest class. Of course, they are not all there, for many of the poorer and more stupid boys have left the school without reaching this class, either from the extreme poverty of their parents, or from their losing all hopes of their children having sufficient intelligence to go so far in the path of learning; but, as a general rule, they enter the class at ten, and leave at about thirteen. They are taught, in mathematics, the First Book of Euclid, algebra up to simple equations; in arithmetic, vulgar and decimal fractions, practice, and simple proportion; general grammar; the geography of Europe and the British Isles; general history; social science from Ellis's "Outlines," and physiology, from Dr. Lankester's "School Manual of Health." I myself assisted at a most interesting examination, showing the highest proficiency on the part of the boys, on the history of the Stuarts, and then, desiring them to give some incident in Bible history analogous to the events of more recent times, their answers were wonderfully accurate. The school hours are from nine o'clock to one, and from two to four; but, and this is, perhaps, one of the most remarkable features of the whole, two hours daily are devoted to instruction in the Hebrew language. Far be it from me to question the propriety of this arrangement, respecting, as I do most sincerely, the religious convictions of every man, and knowing as I do that the interesting traditions of Jewish history require that prayers should be raised and the Scriptures read in the Hebrew language. I quite understand why such a rule should exist; but the point which I would urge upon the consideration of all managers and directors of Christian schools is this, that if it is possible to bring about such great results in a week from which Saturday and Sunday are altogether eliminated, and Friday partially excluded, whilst, from each of the four days which remain, two hours are taken for the study of a dead language, what might not be accomplished in a Christian school, where there would be but one holiday, and where the two hours saved daily might be devoted to secondary or technical education. It is generally admitted that the children of the wage-class leave school at about eleven, and it may be urged that the scheme of education which I have here described as being followed in the highest class of the Jews' Free School is only obtainable by

those whose parents allow them to remain until they are thirteen; but, with this system of tuition, boys of eleven would, at any rate, have spent some time in the second class, and, if removed at that age, it would be with the following results:—They would have learned to read and write well, and would know enough of arithmetic for ordinary business, whilst they would have also learned grammar, European and British geography, history, and a fair knowledge of the Pentateuch both in Hebrew and English, with a tolerable amount of general Biblical knowledge. These magnificent schools have received very rich endowments from time to time, and they are now largely supported by the beneficence of the house of Rothschild. The children pay one penny per week, and the average cost per head for teaching power is about £1 12s. I should add that there is a girls' school of 1,000 girls conducted on the same principle.

Had time permitted, I should much like to have dwelt for a few minutes upon the magnificent educational establishment which, in company with Mr. Edwin Chadwick, I this day visited; I refer to that known as the Rev. Wm. Rogers's middle-class school. I can only say that I came away completely enamoured of that school, and of the principles upon which it is conducted. So much was I struck with what I there saw, that I could not but say to the headmaster, that if ever I could be of any service in promoting the prosperity of that school, or of similar schools, a belt of which ought to encircle the metropolis, he had only to refer to me, and I should be found in my place in Parliament advocating those principles, the soundness of which had been so conclusively established by the results which I there witnessed.

In connection with the subject of education, the Council propose to appoint committees to act in different localities, for the purpose of promoting the establishment of scientific and technical colleges, such as Owens College, Manchester. It is hoped that arrangements may be made for holding meetings in furtherance of this desirable object, in Manchester and in other large hives of industry. The duties of the members of the committees resident in those neighbourhoods will be to try and enlist the sympathies of their neighbours, and induce them to exert themselves in furtherance of our object. The Council rejoice to learn that the subject of scientific instruction is under the favourable consideration of the Convocation of the Province of York.

The Committee which has been formed for the encouragement of the establishment of free libraries and museums throughout the kingdom will continue its labours, by collecting such information as may stimulate and aid the formation of these useful adjuncts to educa-

tion, as generally as possible. It is well known that the necessity for such institutions has been admitted, by the fact that legislative authority has been given for the levying of rates for this purpose. From the returns which have been collected, it appears that in only thirty-one places in England and Wales, three in Scotland, and three in Ireland, have such institutions been established by means of rates.

Marvellous to relate, at the present time, neither London, Glasgow, Edinburgh, Belfast, nor Macclesfield has established a free library of its own by means of rates. The Corporation of the City of London having, doubtless, felt how great such an omission would be in their case, have voted the sum of £25,000, and a site at the east-end of the Guildhall. There they purpose to erect a library, and to provide suitable accommodation for readers, to supersede that at present afforded, which is very meagre. The library consists of 25,000 volumes of books, and there is an average attendance of 1,200 a-month. I am happy to say, that a special Committee of the Corporation has been appointed to stimulate and superintend action in this work.

Another point which has been under the consideration of this Committee is one which I myself had the honour to submit to them, and it is whether the Council cannot, by vigorous action, bring a pressure to bear on the government, and induce them to compel the irresponsible trustees who manage our great art collections to part with their superfluities on loan, and permit the circulation of this mass of duplicate specimens of art-treasures among the local institutions of the Empire. So important an element in the technical education of the country have I always considered this to be that, even before I assumed the post of Chairman of our Council, I had in Parliament, on several public occasions, moved in the matter. During the last session, I questioned the Prime Minister, but the answer I received, while admitting the justice of the request, gave but little hope of carrying out our wishes. I repeated my question again, and got no answer at all.

On a subsequent occasion, the Prime Minister replied to a letter from the Secretary of this Society, asking him to receive a deputation, that he was unable to give any personal attention to the matter. Discouraged, but not defeated, we shall, during the ensuing Session, leave no means untried to bring about what we desire to see, namely, that all local institutions should, by a system of loan, participate in the use of those duplicate specimens of art and science, many of which have been purchased by funds raised by general taxation. So long as the present system of managing our public collections by irresponsible boards exists, I fear that little amelioration can be hoped for in this respect.

I may, however, add that, although it has been one of the principal objects which in my public career I have kept steadily before me, to abolish, if possible, this system of irresponsible managers, and to place our national collections under the care of a responsible Minister of the Crown, who would be liable to be called upon in his place in Parliament to give an account of his stewardship, I must say that, during the last week or so, my opinion has been slightly modified, and for the moment at least, I have felt somewhat doubtful even of the advisability of placing our art-treasures under the care of one responsible minister.

Amongst all the subjects of discussion in Parliament last year, there was scarcely one which had a greater bearing on Arts, Manufactures, and Commerce, than that which was brought under its notice with so much ability by my friend Mr. Graves, the member for Liverpool, when he asked that the government would take into their consideration the propriety of allowing printed matter and parcels to be conveyed through the post at a cheap rate. No attempt was then made to contravene the soundness of the arguments alleged in favour of such a measure, but certainly no promise was given of any determination to accede to the request. It will, therefore, be the duty of the Society of Arts, during the coming Session, to collect all the information they can from those countries—Prussia, Belgium, and Switzerland—where this system has been successfully carried out, with a view of pressing it upon the attention of the government. In Switzerland the Council have good reason to believe that the attempt to combine a cheap parcel-post with a cheap letter-post and cheap telegraphy has been successful, in enabling retail dealers to conduct their business more cheaply, and with considerably reduced stocks, by enabling them to send by letter, or, if need be, by telegraph, their orders to the wholesale depôt. This of course is the case in an especial degree in the matter of perishable goods, and, we have every reason to believe, it enables Swiss traders to compete more equally with England. In Switzerland, and some parts of Germany, it is stated, and I believe accurately, that the substitution of a halfpenny rate for the transmission of printed matter as well as newspapers has produced receipts equal to the old penny rates which they have replaced. I may add that, although as Chairman of the Council of the Society of Arts, I shall do all in my power to bring about what would be so much to the advantage of Arts, Manufactures, and Commerce, I beg to assure those of our members who belong to the manufacturing and commercial world, that my action in this matter will be purely unselfish; and I venture to think that if they had, as I have, the honour of

occupying a seat in Parliament, or had held an official position under government, they would be inclined to petition for a diminution rather than for an increase of facilities for the transmission of printed matter.

In close connection with this subject is that of the management of the telegraphs, which has been undertaken by the government. It is, therefore, now more than ever necessary that there should be some watchful action over this monopoly. There is no doubt that the science of telegraphy may be considered still in its infancy, and it is the instinctive nature of the managers of all monopolies to rest satisfied with what they have, and to reject all improvements. Such is well known to have been the case on the formation of the first electric telegraph company, who, in the first instance, having purchased Cooke and Wheatstone's patents, naturally set their faces against the introduction of newer instruments to supersede them. We cannot, therefore, with this experience, expect that the same spirit will be less manifest now that the telegraphs are to be under the control of a government department. It is with a view to watching scientific improvements, and, if possible, promoting cheapness in the transmission of messages, that the Society will direct its attention to this matter. Such a result will of course be advantageous both to the revenue and to the public, by increasing the number of messages dispatched, and cheapening the rates at which they are sent. Mr. Scudamore, in a Post-office report, states that telegraphic communication in England is only used habitually for the purposes of wholesale trade, or in cases of emergency. In Switzerland, on the contrary, as I have said, there is reason to believe that the transmission of telegraphic despatches at half a franc has been found most successful. It carries information to the very villages, and is made available by the working classes, and thus the labour market is quickened. The Society will see that the experience of the telegraph in other countries is at least made known in this country.

Our members will probably be aware that a Committee has been for some time sitting with the object of marking the houses in which the great and good of former days were born, lived, or died. For this purpose, tablets were required, which, while they should not disfigure the buildings on which they were placed, should be easily affixed, and should be rendered, as far as possible, not only imperishable, but easily cleaned when grimed by the smoke and dirt of our great towns. With such an object, our leading makers of encaustic tiles were applied to. Some refused even to attempt so difficult a task, but after very many failures the Council have the satisfaction to announce

that Messrs. Minton, Hollins, and Co. have at length overcome all difficulties, and I would now draw attention to the specimens on the wall, which are the result of their skill and ingenuity. These tablets are, I think, highly creditable to Messrs. Minton, and completely meet the wishes of the Society of Arts, for, like the incised clay slabs of the ancient Persians, they alter not, neither do they change.

Tablets have been already affixed to commemorate Lord Byron and the Emperor of the French; and leave has been obtained from the owners of the houses to commemorate in a similar manner Sir Joshua Reynolds and Benjamin Franklin. Tablets are also proposed to Flaxman, Barry R.A., Handel, Garrick, Dryden, Goldsmith, Sir W. Blackstone, Sir Humphrey Davy, and Dr. Jenner, and other names will doubtless follow.

The object with which the Society of Arts has undertaken this duty can hardly be better expressed than in the well-known lines of Longfellow:—

Lives of great men all remind us
We may make our lives sublime,
And departing, leave behind us
Footprints on the sands of time;
Footprints, that perhaps another
Sailing o'er life's solemn main,
A forlorn and shipwrecked brother
Seeing may take heart again.
Let us then be up and doing,
With a heart for any fate;
Still achieving, still pursuing,
Learn to labour and to wait.

I believe there is only one other Committee to be re-appointed, and that is the one on musical education. The results of their previous labours have tended to show, conclusively, that music ought to take a much higher place than it at present holds in our system of education.

The valuable information obtained by this Committee on the subject of musical pitch in foreign countries, will have been read in the *Journal* with much interest. It seems clear from this that there is nothing like a uniformity of pitch at present, and it is at least useful to have this fact established.

Our proceedings with reference to the cab question, one in which most of you, as inhabitants of the metropolis, cannot fail to be interested, will, it is believed, be attended with beneficial results. I had the pleasure last Session of heading a deputation to the Home Secretary on the subject, and he soon afterwards brought forward a Bill for placing the regulation of this department under the Home Office.

The premiums offered by the Society for improved forms of vehicles, will, it is hoped, elicit some marked improvement in our cab accommodation.

Prizes have also been offered for the best

models of steamers adapted to the carriage of passengers between England and France, and the result will no doubt be looked for with much interest. The Channel passage is certainly one of the questions of the day, and the Society of Arts, in this as in other matters, being anxious to promote public convenience, has taken action in the matter, and I cannot but say that I think the increasing amount of communication which now takes place between the two countries, and which has of course led to this action on our part, is one of the most hopeful signs of the times.

The result of the frequent intercommunion of the two peoples has already sensibly weakened the prejudices which existed on one side and the other, and which were a necessary consequence of the protracted hostilities which had been waged between the two countries. I feel that it is of the greatest importance that what is done should be done quickly, so that there may be no check to the growth of friendly feelings between the two nations. The multitude of schemes that have been propounded testifies to the universality of the interest felt; and it was with the view of applying a prompt remedy that the Society of Arts offered the prizes which I have just referred to, and seventeen models have been sent in, and will be carefully examined by a special Committee; but, by the terms of our announcement, it is more the laying out of the accommodation, rather than the speed of the vessels, which these models are designed to show. I was somewhat relieved to find that this was so, because from the little technical knowledge of such subjects which I acquired whilst Secretary of the Admiralty, I was convinced that, with the small draft of water, and with the given length, no great increase could be expected over the speed of the fast boats now performing the service. I look, therefore, upon such boats as merely a makeshift, tending to preserve the happy feelings of friendship now existing between the two countries, until something permanent, at a moderate cost, can be arranged. In my opinion, all that could be desired would be a line of fast and powerful steamers, such as the new Holyhead and Dublin boats, with comparatively steady qualities and ample cabin accommodation, and doing the passage in about one hour. While discussing this question, let us not forget that the keynote of the whole position is this, that at Dover there is a pier which has cost £750,000, with 36 feet of water at its base, alongside which vessels of any size and draught of water may generally embark or disembark, and, with but very slight additions, this would be the case every day of the year. I have this on the highest professional authority. It is

on the French coast, therefore, that the money should be spent, and it could be successfully spent either at Boulogne or Calais, by running out a pier to join the harbour with the shore. Of the two harbours, as they now stand, Calais is far preferable—I mean for such steamers as we have, or those proposed in the conditions of the premiums offered by the Society, which draw only seven feet of water. It is very seldom that a vessel cannot get into Calais at any time of the tide, while at Boulogne, except for two hours before and after high water, no vessel can enter, and even then it is very difficult when a strong wind is blowing from the westward, which, in the Channel, is the prevalent wind. Were the piers to be thrown out as I have suggested, this difference would be reduced. I may add that I have seen and studied a most excellent scheme for doing this, the work of a distinguished professional friend of mine. It is now before the municipality of Boulogne, and has been submitted to the Emperor of the French. A point of no small importance is, that it could be completed in 18 months from the time it was begun.

There are several projects for a tunnel under the sea, and, as one of these schemes is to be unfolded in this room in a fortnight's time, I will say nothing about it to-night. Then, there are the schemes for a bridge across the Channel. One especially has attracted great attention in Paris, and is reported to be favourably looked upon by the Emperor of the French. The designs for this Channel bridge are the work of Monsieur Boutet, and have, I believe, been already discussed by the Society of Engineers; and my impression is, that this is the best scheme for a bridge over the Channel that has been proposed. There is in Paris a model, on a large scale, which bore ten times the weight which would require to be borne by the Channel bridge, constructed with less than one ton of metal, and resting on two abutments of rough timber, which were incapable of sustaining a very great strain. M. Boutet was kind enough to describe his drawings to me at length; and even if the Channel bridge were not attempted, his plan of building bridges is capable of such astonishing results as to make it well worthy the study of our own engineers. My objection to such schemes, however, is not only the vast cost at which they are estimated, but also the great length of time that would elapse before their completion.

Before I conclude, I may inform our members that our library has been re-arranged, a new catalogue made, and a librarian appointed, and that a reading-room is attached to it, in which may be seen the various newspapers, and most of the scientific periodicals, not only of England, but of France and Germany; and it may be

useful to members coming up from the country to know that they will find in the reading-room every convenience for conducting their correspondence. Our library is very rich in the transactions of learned societies, and, indeed, constitutes a valuable library of reference for Arts, Manufactures, and Commerce.

Only one duty now remains for me, and that is to thank you most cordially for the kind and patient attention with which you have listened to my long address. If I had had little to say, and if that little had been unsatisfactory, I could have stated it in a few words, but our Society is now so large, and the objects of its operations are of such national importance that brevity on such an occasion is impossible. Had time permitted, I could have said much more. I should like to have congratulated the art-world on the new galleries at the Royal Academy, and on those proposed for the National Gallery; and I should like to have told you somewhat of the doings of that important Committee on the Thames Embankment which sat here, presided over on many occasions by one who has perhaps done more than any one else for the embellishment of London, the present Marquis of Westminster. However, time warns me to refrain, and I will only add that although the power possibly, and very probably, will be wanting in me to do full justice to your Society during the coming year, I can most positively assure you that the will is there, and that, as far as I can, I will in every way do my best to promote the interests of this great Society, which has now, for considerably more than a century, been endeavouring to further the progress and improvement of Arts, Manufactures, and Commerce in this country.

At the conclusion of the address, Mr. William John Wilson was called up to receive the Queen's Prize of twenty-five guineas. The Secretary having read a list of the certificates upon which the prize was awarded, the noble Chairman presented it to him, with a few congratulatory remarks.

Mr. COLE, C.B., said it was not the practice for any discussion to follow the opening address; but, having a Chairman who had thrown himself so heartily into his work, as it was evident the noble lord had done, it would be most ungracious to separate without awarding him a most cordial vote of thanks. He was happy to say, as an old member of the Society, that when gentlemen ceased to be Ministers of the Crown, it sometimes happened that office was found for them in this Society. Doubtless, by the ability which their Chairman had displayed whilst Secretary of the Admiralty, he had qualified himself for a still higher position in the public service, whenever there was a change in the political position of affairs. He could not help saying that they had never had a Chairman who had made himself more thoroughly master of the various subjects upon which he had to touch, and it was evident to all that his duty on that occasion had been performed in no perfunctory manner. He, therefore, had much pleasure in proposing a cordial vote of thanks to his lordship.

Mr. SEYMOUR TEULON seconded the motion, which was carried by acclamation.

Lord HENRY G. LENNOX briefly acknowledged the compliment, and the meeting then separated.

ANNUAL INTERNATIONAL EXHIBITIONS.

The plans and designs for the buildings wherein the forthcoming international exhibitions are to be held, have been approved by her Majesty's Commissioners for 1861; and a competition having been invited, the following builders sent in tenders:—

For the Main Building.

Cubitt and Company	£72,200
Holland and Hannen	71,800
Mansfield, Price, and Company	70,900
Smith and Company	68,407
Lucas, Bros.	68,335

For the Conservatories.

Holland and Hannen	£5,940
Smith and Company	5,896
Mansfield, Price, and Company	5,850
Cubitt and Company	5,780
Lucas, Bros.	5,696

Those of Messrs. Lucas, being the lowest in both cases, were accepted, and, on Monday, the 15th inst., a party of navvies proceeded with pickaxes and spades to the site of the Exhibition, and commenced the excavations for the foundations. It is a matter of congratulation for the Commissioners that they have the services of builders already experienced in the construction of exhibition buildings, besides being already engaged upon works in which the Commissioners have an immediate interest, viz., the Royal Albert Hall.

Many alterations will be necessary in the portions of the Horticultural Gardens upon which the exhibition buildings will abut. The unnatural and geometric slopes existing at present will probably give way to a spacious and level grass plot—an arrangement certainly conducive to a good effect for the buildings, which are on a far smaller scale than their similar predecessors. Two large structures will be erected at the back of the straight portions of the arcades running east and west of the Horticultural Gardens. They will each contain two stories, of 500 feet run, by a breadth of about 30 feet. The upper storey will be the space allotted to pictures and fine arts, and the under portion will be for the particular branch of manufacture or industry chosen for representation at the exhibition. The space will be divided amongst the foreign countries who signify their intention of contributing; but, in the arrangement of articles, all similar objects will be brought together, and no regard in the arrangements given to the country by whom they are sent. This is manifestly an improvement upon the old system of spacing out exhibitions according to countries, inasmuch as greater facilities for comparison are thus obtained.

Although to foreign countries will be allotted certain spaces, still, independent exhibitors of any nationality can select for themselves to send, either through their own commission or direct to the head organisation, the objects they desire to exhibit. On this point, however, as the time for the reception of goods approaches, more detailed regulations will be issued. The first announcement, sent out already, can be accepted only as a mere sketch of the scheme proposed by her Majesty's Commissioners.

As far as can be learned, the catalogue is to be a feature in the undertaking. In addition to the ordinary bare descriptions of the exhibits, the date of the birth, the honours and the works of the artist, art-worker, and producer of new manufactures will be given.

The exhibition of fine art, pictures, sculpture, and art applied to industry, will take place each year. The various industries and manufactures will be represented in turn. The first year, 1871, is devoted to pottery of all kinds; woollen and worsted fabrics, including the machinery employed in their production; and educational objects, &c.

In the section for fine arts, there can be little doubt that each year will prove capable of bringing forward a diversity of artistic productions. The Union Centrale of Paris, this year, has held an exhibition of objects, in which the application of art in their manufacture is an essential feature; and, certainly, if this exhibition is a criterion of the progress annually made in art productions in France, it augurs well for the fine art section in the forthcoming Annual International Exhibitions.

In a future notice a description of the architectural features of the buildings, as well as of the semicircular arcades at the north of the Horticultural Gardens, whereby the Albert Hall will become connected with the exhibitions, will be given.

ARCHITECTURE OF LONDON.

In view of the proceedings of the Thames Embankment Committee of this Society last session, the following extract from the *Times* of the 17th inst., will interest the members:—

"The House of Commons Select Committee on Thames Embankment Approaches, was instructed to inquire what controlling power over public works in the metropolis is vested in any government department. The testimony given before the committee shows the unsatisfactory way in which these matters are managed. The construction of the Thames Embankment was intrusted [by Parliament to the Metropolitan Board of Works, without any directions as to the character of the work. The Board might have constructed it of brick instead of granite, and might have made it no ornament to the metropolis. In fact, it is a very fine work as an engineering work, but Mr. Layard points out that the architectural details might have been improved if the designs had been submitted to a competent authority. The landings, he says, are, in many places, far from handsome, and the coping of the parapet is not worthy of the Embankment. At this moment, it seems, there is no control over the elevation of the railway stations, and the railway company might raise stations entirely disfiguring the Embankment. So, also, Parliament gave power to the City Corporation to erect the new Meat and Poultry Market, in Smithfield, in any way they pleased. The design of the Holborn Viaduct was laid before Parliament to show what the Corporation intended doing, but the Act passed did not bind them to adhere to that design. It was represented to the committee that, in the City, some works are under the control of the Commissioners of Sewers, and some are under one standing committee of the Corporation, and some under another. The design of the railway bridge across the river at Blackfriars went before the Bridge Committee; the continuation of that line of rail across Ludgate-hill went before the Sewers Commission. The new market in Smithfield went before the Markets' Improvement Committee, but the streets and approaches were submitted to the General Improvement Committee. The Bridge Committee seem to have settled the erection of London-bridge, but the approaches were made by a different committee. With the slightest alteration, the Monument might have been brought in at the end of King William-street, making a fine vista. A remarkable drinking-fountain has been put up in King-street, close under the beautiful front of St. Lawrence, Jewry; that is described as under the control of the parish. It is stated that the Metropolitan Board of Works have power to alter and abolish the name of any historic street. The powers of the First Com-

missioner of Works are very limited; he could not prevent the erection of the ugliest of statues in a public square in London. In the instance of great Government works, such as the Foreign-office, a plan is exhibited in the library of the House of Commons before the Bill is passed, but the Bill gives uncontrolled power to the Government. Some public buildings are under the care of one functionary, and some of another; the committee learnt that they were sitting in their committee-room by the pleasure of the Lord Chamberlain, and that he has the control of the internal arrangements of the Palace of Westminster, the assignment of the apartments, and the occupation of them. In those semi-public works which are executed under powers obtained from Parliament, there is no control after the Act is passed; and railways have been admitted into London without due stipulations as to the architectural character of the works. The result has been unfortunate. London-bridge is a very fine entrance to the City; but there is an iron girder crossing the road at no possible angle with the street, and one part is a semicircle joined on to a straight girder in the ugliest way possible. The fine old church of St. Saviour is blocked out by this vile girder crossing the street. Entering the new street—Southwark-street—you find another nasty girder crossing at a very bad angle. That street, the finest in the Borough, was built by the Metropolitan Board of Works, at a great cost, and immediately afterwards a railway company obtained power to go over it, and has really made the Blackfriars end a tunnel by a series of bridges, one following another. This has caused a serious loss to the Board by depreciation in value of the land on either side of the street; that is a source from which a gain should be obtained, towards defraying the expense of the improvement, so that the actual net cost of new streets in London is but about 60 per cent. of the gross outlay. There are several very objectionable railway bridges or viaducts on the south side of London. Crossing the Thames, the river frontages of the railway-stations at Charing-cross and Cannon-street are seen to be hideous. The two bridges at Blackfriars spoil one another. Mr. Henry Cole produced to the committee a photograph of the railway bridge across Ludgate-hill, showing wall advertisements, Alderman Waithman's monument, the bridge stopping the view of St. Paul's, altogether (said the witness) a sort of thing for a pantomime. Mr. R. Redgrave observed that in France, before that bridge was built, a canvas model would have been put up, which would have enabled the public to see beforehand the ugliness of the work. He supposes that if the public had thoroughly appreciated beforehand what they were about to erect, the Nelson Column would never have been raised; and he asked what can be more disgraceful than the Duke of Wellington pressing down an enormous arch at Hyde-park. The committee took much evidence as to the course to be adopted in future. With regard to private houses, we are improving in taste year by year, and the City authorities, in making new streets, require plans of the elevations of the houses to be submitted to them before they grant building leases. It was agreed that there ought to be some control over semi-public works in the metropolis, such works as cannot be executed without Parliamentary powers—some power to say, 'This is so ugly that it shall not be done.' A scheme for a department of architecture and arts, represented in both Houses of Parliament, and aided by a council of advice, had its advocate; so also had the claim of the Metropolitan Board of Works, as representing the ratepayers. Mr. Layard, then First Commissioner of Works, stated that he should be content, as a first step, with a deposit of plans, elevations, and designs in his office whenever any public company or corporate body applies for Parliamentary powers, to enable it to execute any works in the metropolis, and that the First Commissioner of Works should report to Parliament upon the subject with a view to

the committee on the Bill checking the execution of anything which would disfigure the metropolis. This is what was finally recommended by the committee. Mr. Layard noticed that valuable aid is obtained from the learned bodies of the metropolis. He has proposed that historical and Royal sepulchral monuments should be placed under the care of the First Commissioner of Works, and he wrote officially to the President of the Society of Antiquaries for a list of such statues and monuments; the society appointed a committee to compile such a list for him."

INSTRUCTION IN SCIENCE AND ART FOR WOMEN.

The second and third lectures of Professor Huxley's course on "Physiography," were delivered on the 13th and 16th inst., at the South Kensington Museum. The points discoursed upon were as follows:—

LECTURE II.

1. The right bank of a river is that which lies on the right hand, when the back is turned to the source of the river.

2. When the face is turned towards the north, the east lies to the right hand, the west on the left hand, the south behind. The position of the sun, at mid-day, indicates the south; that of the pole-star the north. The magnetic needle indicates the north and the south.

3. By general consent, the top of an ordinary map is assumed to be the north. The size of a map bears a certain proportion to that of the countries it represents. This proportion is the scale of the map.

4. The course of the Thames and of its affluents is determined by the shape of the ground which forms the surface of the Thames basin. The Thames basin is bounded by relatively high lands, which separate it from other river basins, and are called "water-sheds" or "water-partings." Portions of these high lands rise into hills, such as the Chiltern hills on the north; the Cotswolds, on the west; the North Downs, on the south.

5. The whole surface of Great Britain is divided by water-sheds into a series of river basins; and these are separated into three groups by a three-rayed water-shed, which has nothing to do with the highest hills or mountains.

6. A vertical section of the ground, which forms the middle of the basin of the Thames, shows it to be composed of layers of gravel, sand, and clay, several hundred feet thick, and, beneath this, of chalk, which, in many places, contains flints. Towards the edge of the basin, on all sides, the layers of gravel, sand, and clay, disappear, and the chalk lies at the surface.

7. Gravel and sand are easily permeated by water; clay is not; chalk, when solid, is not. These circumstances, and the arrangement of the beds, determine the existence of springs and wells.

8. The gravel and sand are such as may be found in the bed of a rapid stream, or at the foot of a cliff on the sea-shore.

9. The clay is mud, such as may be found at the bottoms of slow moving rivers or sheltered places in the sea, dried and hardened.

10. The chalk is mud, such as exists at the bottom of the Atlantic ocean.

LECTURE III.

1. The Thames and its basin have not existed for ever as they now exist. Every year the rain-fall washes, or dissolves, away part of the soil over which it flows, and carries it to the sea. This is *pluvial denudation*.

2. The present form of the basin determines the course of the river; but the rain has given rise to the present form of the basin.

3. The action of the rain again is determined by the nature and the arrangements of the beds of which the ground forming the river basin is composed.

4. Rain and river dissolve away chalk, rub down flint into gravel and sand, and wash clay into mud.

5. The Thames carries down to the sea not less than 14,000,000 cubic feet of solid material, either dissolved or as mud, every year. At the present rate of denudation, the whole basin would be washed down to the sea level in 1,000,000 years; and the surface of Britain would everywhere be washed down to a plain, level with the sea, in less than 5,000,000 years.

6. The undissolved matter carried down by river is deposited, in the form of layers of mud, sand, and gravel, in its estuary or delta. In any given place the undermost of these layers must needs be oldest.

Manufactures.

A NEW MATERIAL FOR HATS AND BONNETS.—A new process has lately been started in the City for making imitation straw hats and bonnets. The invention is of American origin, and is being worked by a company, under the title of the *Sultana Hat Company*. The material is a composition, which, by the addition of certain sizing ingredients, is rendered tough and strong, and capable of withstanding the action of water. Imagine a steam-engine cylinder and piston turned topsy-turvy, the bottom being previously taken out, the piston-rod working through a stuffing-box from below. Imagine, instead of the piston, a mould, made of wire gauze in the shape of the hat required, and strengthened beneath with perforated copper, so as to bear the pressure. The piston, or rather this mould, fitting accurately to the inside of the cylinder, being at the bottom of it, the composition, in a thin state, is poured into the cylinder; the mould then, by means of suitable machinery under the control of the workman, rises, and, in so doing, creates a vacuum beneath it, causing the water, by the atmospheric pressure above, to be driven through the mould, so that, by the time the mould has risen to the top, all the water has passed through, leaving on the mould a solidified sheet of pulp of the shape required. A reversal of the motion, for the descent of the mould, in readiness to receive another charge of pulp, at once frees the hat from it, from whence it is taken, and placed on a wire tray, and when a sufficient pile of them has accumulated, they are taken to the drying-room. In the course of a few hours all moisture has evaporated, and the hat is ready for the next process, that of stamping. A metal die, of the proper shape, and duly cut to give the resemblance of straw plait to the surface, is placed under a powerful fly press, and on this the hat is placed, where, with one blow, its final shape and surface is given to it. The hat then passes into the hands of a girl, who puts on the proper colour, to suit the tastes of the wearers, which, at the same time, imparts a waterproof surface to the hat. A second trims off the rough edge; a third fixes a wire to it; a fourth binds it; whilst a fifth makes and puts in the silk lining, after which they are sorted for sale to the wholesale houses. The hats are tough and strong, and are thoroughly waterproof. They are undistinguishable in appearance from straw, and their cost is little more than half.

Commerce.

THE PEPPER TRADE.—The *Straits Times* states that "for a long time back the scarcity of pepper and the high prices paid for it have been greatly augmented by

a very steady, and, on natural grounds, a very extraordinary demand for exportation to Saigon—itself a pepper-producing country. Even if not a single pepper vine bore fruit in French Cochinchina, the quantities imported there were far in excess of the small local consumption; the fact is, the entire bulk was taken up for transshipment to France. A roundabout traffic this, certainly, but one that, nevertheless, must have had very satisfactory results to those engaged in it. The administration of the French Empire, patriarchal ever in its disposition towards its offshoots, determined to aid the development of its promising Eastern colony, and, among other things, to induce a greater effort to be made in the production of pepper. For this purpose the duties leviable in French ports upon the importation of this article were entirely remitted in the case of Cochinchina produce, or what was the same thing, so far as the Imperial authorities could judge, Saigon exported produce. The differential duties thus created were very considerable—so considerable that, as we have seen, it was much more profitable to send pepper up to Saigon, to be there shipped to France as of Cochinchina growth, than to send it on, at much less expense and much smaller freight, direct from the Straits. The Imperial government were powerless either to detect, or, if they did detect it, to control this abuse by any action taken in France, for it was impossible for them, on arrival of a cargo, to sift the growth of other countries from that of Cochinchina, but owing to the remonstrances of the Chamber of Commerce at Saigon the local government there has taken the matter in hand, and issued a decree which, while not interfering with the freedom of the port, it is hoped may check the evil. For the future, certificates of origin will be required upon all pepper allowed to be exported to France, and none but such as is declared on shipment to be of Cochinchina origin will be admitted free of duty on arrival at France."

Colonies.

NEW ZEALAND FINANCE.—The estimated expenditure for the colony, for 1869 to 1870, is £969,587, as follows:—Civil list, £27,500; permanent charges, £274,089; permanent provisional account, £137,416; domains, £2,480; public departments, £40,890; law and justice, £51,808; postal and telegraph, £134,334; customs, £40,475; native service, £21,407; miscellaneous, £31,513; militia and volunteers, £27,669; armed constabulary, £118,000; contingencies, defence, £32,000. The revenue is estimated as follows:—Customs, £816,000; bonded warehouses, £5,000; stamps, £66,000; post office, £48,000; telegraph, £25,000; miscellaneous, £72,000; total, £1,032,000.

SUGAR IN QUEENSLAND.—It is stated that the growth and manufacture of sugar in the north of the colony, are proceeding with extraordinary rapidity and success, and there is every reasonable prospect that, in a very short time, Australian consumers will be entirely independent of foreign producers.

AGRICULTURE IN NEW ZEALAND.—The total number of acres now under cultivation is 687,015, of which 152,568 acres were in Otago, and 122,394 in Auckland. The average yield in New South Wales, during the last ten years, is 15 bushels per acre, whilst that of New Zealand is 25 bushels per acre, Canterbury, the largest wheat-producing province, yielding 21, Otago 34, and Marlborough 19 bushels per acre. The gross produce amounts to 1,619,169 bushels; the population, according to the census of 1867, was 218,484, so that, after reserving 6 bushels per head for food, and 4 for seed, about 454,457 bushels remain over for shipment. Otago, the largest producer of oats, yields an average of 37 bushels per acre, and Canterbury 26 bushels, over 713,850 acres

of land. The yield of barley is larger than was expected. Canterbury yields 21 bushels 32 lbs. as the average of 191,562 acres.

COMMERCE AND RAILWAYS IN VICTORIA.—According to the official returns, lately published, the value of the imports and exports at the Port of Melbourne, up to September 4th, 1869, is as follows, compared with the corresponding period of the previous year:—Imports, 1869, £9,173,692; imports, 1868, £8,239,486; exports, 1869, £8,181,387; exports, 1868, £9,366,549, showing an increase of £934,206 in the value of the imports, but a decrease of £1,185,162 in the exports. According to returns lately published, it appears that a large increase in the revenue of the government railways, up to 2nd September, has taken place. The total revenue amounts to £383,518 1s. 11d.; against £365,812 15s. 10d. for the corresponding period of last year.

Notes.

PROPOSED MEMORIAL TO THE LATE SIR JAMES ROSS.—Several naval officers, men of science, and friends of the late Admiral Sir James Ross, F.R.S., consider that his eminent public services as a navigator deserve some suitable public memorial, to record his great achievements. The Antarctic expedition, under his command, is the most renowned voyage, as regards its results for the objects of science and geographical discovery, since the days of the illustrious Captain Cook. The discovery of Victoria Land, on the Antarctic Continent, could only have been accomplished by an officer long inured to Polar service. Sir James C. Ross served in every Arctic expedition under Sir Edward Parry and his uncle, Sir John Ross; he passed nine winters and sixteen summers in the Arctic Regions. Among his great achievements he planted the British flag over the position of the North Magnetic Pole, whilst serving with Sir John Ross in the expedition to Felix Boothia; and it was his glory to attain the highest latitude in both hemispheres ever reached by man—in the north when he served with Parry, and in the south when he commanded the Antarctic expedition. The committee invite the support of any who desire to join in this tribute of honour to the memory of so renowned a navigator, and propose to raise a sum of money for the purpose of placing a portrait of him in the painted hall of the Royal Hospital, Greenwich, near to that of the great navigator, Captain Cook. This object is supported by General Sir Edward Sabine, K.C.B., President of the Royal Society; Sir Roderick Murchison, Bart., K.C.B., F.R.S., President of the Royal Geographical Society; the Right Hon. Sir John Pakington, G.C.B., M.P., F.R.S.; Lord Henry G. Lennox, M.P., Chairman of the Council of the Society of Arts; Major-General F. M. Eardley Wilmot; Captain Sir F. Leopold McClintock, F.R.S., A.D.C., R.N.; Professor Huxley, F.R.S.; Professor Tyndall, F.R.S., and many others. Communications may be addressed to the honorary secretary, Rear-Admiral Ommanney, C.B., 6, Talbot-square, Hyde-park, W.

MEETINGS FOR THE ENSUING WEEK.

- MON.....** R. Geographical, 8½. 1. Mr. Ney Elias, "Exploration of the New Course of the Yellow River of China." 2. Hon. W. G. S. Jerningham, "Failure of Earthquake Predictions in Peru." Medical, 8. London Inst., 4. Social Science Assoc., 8. Mr. G. W. Hastings, "Review of the Discussion, at the Bristol Congress, on the Relations between England and her Colonies." Inst. of Surveyors, 8. Mr. W. Hope, "The Distribution and Agricultural Use of Town Sewage."
- TUES ...** R. Medical and Chirurgical, 8½. Civil Engineers, 8. 1. Discussion on Mr. Gaudard's paper,

- "On the Strength and Resistance of Materials." 2. Mr. Edward Dobson, "On the Public Works of the Province of Canterbury, New Zealand."
- Ethnological, 8. 1. Sir George Grey, "On some Quartzite Implements, of Palæolithic Type, from the Drift of the Cape of Good Hope." 2. "On the Races and Languages of Dardistan hitherto undescribed."
- WED ...Society of Arts, 8. Mr. Thos. Dickens, "On Silk Supply." Geological, 8. Archaeological Assoc., 8.
- THUR ...Royal, 83. Antiquaries, 84. Zoological, 84. Philosophical Club, 6. Mathematical, 8. London Inst., 84.
- FRIQuekett Club, 8.
- SATR. Botanic, 34.

Patents.

From Commissioners of Patents' Journal, November 12.

GRANTS OF PROVISIONAL PROTECTION.

- Adhesive compounds—3095—J. H. Johnson.
- Artificial fuel, manufacturing—3164—J. Dewar.
- Artificial stone, &c., manufacturing—3174—R. Spice.
- Axle boxes—2919—D. Parrish.
- Boilers, &c., apparatus for feeding—3152—J. C. Mewburn.
- Bottles, apparatus for stopping—3065—J. Becker.
- Boxes for preserving letters, &c.—3083—J. Cash and J. Cash, jun.
- Bridges—3071—F. Jenkin.
- Carding engines—3168—A. Thornton and B. Senior.
- Cartridges—3162—B. Bianchi.
- Cartridges—3175—G. White.
- Cement, manufacturing—3143—G. Burge, jun.
- Cigars, machinery for manufacturing—3144—B. J. B. Mills.
- Circular saw benches—3099—W. B. Haigh.
- Clocks, &c.—3090—L. Meurin.
- Coal, apparatus for cutting and getting—3135—A. Knowles.
- Coffee, &c., apparatus for roasting, &c.—3073—R. J. Goodbody and R. E. Donovan.
- Cooking and Lighting by gas, apparatus for—3182—S. Leoni.
- Cooking apparatus—3149—O. Fahnehjelm.
- Copper, &c., manufacturing—3120—J. B. Elkington.
- Cornets, &c., chromatic slides for—3165—E. Ford.
- Counting and registering apparatus—3079—W. J. Rivington.
- Cupboard doors, &c., turn buckles for—3127—G. Tubbs.
- Door-gates and caissons—3194—E. Finch.
- Drawing frames—3131—W. E. Newton.
- Drying machines—3158—W. B. Espeut.
- Electric telegraphs—3196—H. Wilde.
- Fire-engines, &c., machine for cleaning hose pipe used for—2985—B. Calvert.
- Fireplaces—3101—T. Hoey.
- Flax, &c., machinery for breaking, &c.—3155—A. P. Wright.
- Grain-mashing machinery—3019—F. F. Whitehurst.
- Guns for bayonet drill—3171—P. Jensen.
- Horses, apparatus for singeing—3138—T. Taylor and J. W. Davies.
- Horses, &c., clipping—3126—J. W. More and J. Norman.
- Hot-air engines—3172—B. Tower.
- Human excrement, apparatus for receiving, drying, and deodorising—3129—F. Taylor.
- Hydraulic presses, &c., wrappers used in—3105—J. H. Nutt.
- Iron girders—2968—T. Stevenson.
- Iron, &c., electro-coating—3159—A. Minton.
- Iron, &c., welding—3153—W. E. Gedge.
- Lace, &c., manufacturing piles on—3184—T. Wright and I. Fox.
- Ladies' and children's combined under-garment—3000—G. W. Rowley.
- Lifting apparatus—3157—T. Moore and C. A. Head.
- Liquids, measuring, &c.—3186—H. J. H. King.
- Locomotion, means of—2942—A. H. Brandon.
- Lubricating compounds—3145—J. H. Spencer.
- Lubricators—3141—M., L., and E. Darnbrough.
- Marble, &c., compounds in imitation of, to be used in manufacturing fancy articles—3190—E. Snell.
- Marine steam engines, regulating the speed of, when the screw is lifted out of the water—3200—C. de V. Wells.
- Metal columns, apparatus for moulding and casting—3140—C. D. Abel.
- Metallic elastic packing, self-lubricating—3136—W. W. Girdwood.
- Metallic sheets, &c., apparatus for bending and jointing—3134—J. James.
- Metallic vessels for preventing inflammable substances from igniting—3185—F. F. Samler and A. Anthoine.
- Metals, machines for shaping—3111—A. Bowater.
- Motive-power engines—3154—L. Wray.
- Motive-power engines—3178—A. H. Brandon.
- Motive-power machinery—3176—R. Davies.
- Paper pulp, treating wood, &c., for the production of—3193—G. Sinclair.
- Presses for compressing cotton, &c.—3123—J. Watson.

- Pulley blocks—3156—R. Marsden.
- Railway carriages—2618—J. Edwards.
- Railway carriages, &c., axles for—3130—N. R. Vail.
- Rotary blowing engines—3067—W. R. Lake.
- Salts of ammonia, manufacturing—3148—R. J. Everett.
- Saws, &c.—3122—R. Ventress.
- Scotch bonnets, manufacturing—3179—A. Wyllie.
- Sewing machines—3075—H. A. Bonneville.
- Sewing machines—3169—W. Birch.
- Sewing machines, apparatus for making tucks applicable to—3202—A. Russell.
- Ships' rudders, &c.—3173—C. G. Gumpel.
- Ships, &c., armour-plating—3113—W. Llewellyn.
- Ships, &c., propelling—3087—T. Hydes and J. and J. E. Bennett.
- Ships, &c., raising sunken—3128—L. P. Muirhead.
- Sink traps—3198—M. Wilson.
- Smoke, consuming—3170—W. and J. Jackson and J. Cowgill.
- Spindles used for preparing and spinning flax, &c.—3168—R. C. Addy.
- Spinning and doubling machinery—3148—J. Elce & W. J. Gradwell.
- Steam boilers—2848—R. Crickmer.
- Steam boilers and generators—3132—S. C. Salisbury.
- Steam carriages for common roads—3142—A. Nairn.
- Steam generators and surface condensers—3139—J. A. Miller.
- Steam lubricators—3103—J. P. Rennoldson.
- Stopcocks, self-acting—3187—T. S. Martin.
- Suction siphons—3160—E. de Lagillarde.
- Tanneries, obtaining valuable products from the waste liquors run off from—3124—S. Bennett.
- Timber, machinery for sawing and cutting—3191—J. McDowall.
- Tin ores, &c., separating—2827—R. and W. W. Martyn, W. C. Trevena, and T. H. Harry.
- Toy bricks for children—3109—C. Simpson.
- Tramways, &c.—3180—C. E. Cawley and J. Newton.
- Ventilating apparatus—2814—W. Chambers.
- Watches, tools for manufacturing parts of—3192—W. Gardner.
- Water-closets—3177—W. Connell.
- Water, controlling the flow of, from constant supply pipes—3181—J. P. Hawley and E. E. Hill.
- White lead, &c., manufacturing—3093—W. R. Lake.
- Wire, apparatus for reducing the diameter of—3115—O. L. Hopson.
- Wire rope, flat—3097—J. Edge.
- Wrought-iron, &c., manufacturing—3150—C. Sacré, S. Perkins, and W. Smellie.
- Yarns or threads, machinery for doubling—3161—W. R. Watson and R. Murray.

INVENTIONS WITH COMPLETE SPECIFICATIONS FILED.

- Gas meters—3216—P. and A. Walker.
- Hemp, machines for heckling—3226—W. R. Lake.
- Steam boilers, generating steam in—3218—N. Shaw.

PATENTS SEALED.

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|---|------------------------------------|
| 1367. J. Bullough. | 1502. H. G. Whitehead. |
| 1471. J. Fawcett. | 1531. E. Taylor. |
| 1477. I. and J. H. Storey, H. Lea, and T. Lane. | 1549. W. McAdam. |
| 1430. J. T. Griffin. | 1558. C. C. Parker. |
| 1432. H. B. Barlow. | 1629. J. Snape. |
| 1485. F. Hedley. | 1670. J. Hauworth and H. Horsfall. |
| 1494. F. E. Saxby and I. M. McGeorge. | 2027. J. Knight. |
| 1495. W. Wilkinson and M. Boss. | 2329. J. Bapty and A. Hall. |
| | 2712. A. Collingridge. |

From Commissioners of Patents' Journal, November 16.

PATENTS SEALED.

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| 1505. A. Dunn and A. Liddell. | 1571. E. H. Pulbrook. |
| 1515. T. and J. Fagg. | 1667. J. Cockshoot, jun., and H. Weatherill. |
| 1519. A. M. Clark. | 1668. P. Kirk. |
| 1520. G. Allan. | 1706. H. Larkin and W. White. |
| 1535. A. V. Winkle. | 1747. H. Kinsey. |
| 1538. W. Martin. | 1862. J. H. Banks. |
| 1540. G. Martin. | 1885. J. H. Johnson. |
| 1543. J. E. Dowson, jun., and A. Dowson. | 2089. W. R. Lake. |
| 1560. A. A. Rossignol. | 2435. E. H. C. Monckton. |
| 1569. J. G. Tongue. | 2551. J. Ritchie. |
| 1573. A. Munro & W. B. Adamson. | 2684. J. J. Bodmer. |

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

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| 2926. H. A. Bonneville. | 3061. P. G. B. Westmacott. |
| 2948. G. Crawshaw & J. Thomas. | 2959. J. R. Cadman. |
| 2957. G. Crawshaw & J. Thomas. | 2866. T. Page. |
| 3065. G. Haseltine. | 2976. J. F. Belleville. |
| 2960. A. Hawkins. | 2978. J. Whitehead. |
| 3012. J. M. Dunlop & F. Crossley. | |

PATENTS ON WHICH THE STAMP DUTY OF £100 HAS BEEN PAID.

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| 3038. W. Palliser. | 3136. J. Taylor, jun. |
| 3111. J. B. Edmondson, J. Carson, and J. Blaylock. | 3097. C. W. Harrison. |